

**OWENS-BROCKWAY**  
GLASS CONTAINERS  
& unit of Owens-Illinois

Engineering Department  
Technical Center

**RECEIVED**  
DEC 01 1989

US EPA RECORDS CENTER REGION 5



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**RECEIVED**  
TECHNICAL SUPPORT  
SECTION

November 27, 1989

DEC 01 1989  
Ecology and Environment, Inc.  
111 West Jackson Blvd.  
Chicago, IL 60604

**RECEIVED**  
DEC 01 1989

SUPERFUND PROGRAM  
MANAGEMENT BRANCH

Attention: Mr. Sam Borries

Re: GROUNDWATER DATA

Dear Mr. Borries:

In response to your request for available groundwater data from our Alton Plant #7, attached are the results of sampling of the seven monitoring wells at the Alton site.

I have also enclosed a copy of a map showing locations of the wells and well log data.

It is my recollection that the organic materials, acetone, methylene chloride, caprolactam and Bis (2-Ethyl hexyl) pththalate were determined to be laboratory contamination or sampling artifacts.

As explained to you and EPA, we do not believe the site investigation (September 12 and 13, 1989) was conducted in either the scope of EPA's request or in a manner that is representative of the site.

The scope of the investigation was defined as an investigation of Owens-Illinois Plant #7 this was confirmed by you and Mr. William Messenger, Chief Pre-remedial Unit, U. S. EPA, Region V. The Alton Plant #07 site was a glass container operation that had been closed and has been largely demolished. This facility utilized an EPA generator #ILD006276422.

Adjacent to this property is an operating mold manufacturing facility and foundry identified as Owens-Illinois Glass Container Plants 94 and 96. These operations utilize an EPA generator #ILT180013898. This site was not identified as being within the scope of the subject investigation on EPA's FIT request.

Since the request for a site investigation from EPA was for generator #ILD006276422, we believe it was inappropriate and not within the scope of the site investigation to extend this sampling to the other facilities.

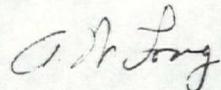
Ecology and Environment, Inc.  
November 27, 1989  
Page 2

The sampling on these two separate sites included nine samples from various locations. Of these, seven of the nine were non-representative of the general condition existing at these site. Several of these samples were taken from railroad spur lines and two were from very isolated small oil spill areas. In addition, the observed decontamination procedures were susceptible to cross contamination. Although field equipment were washed with soap and distilled water, no final solvent rinse was utilized to remove possible oily residue.

For the above reasons, Owens-Illinois believes the data generated from this sampling plan is not representative of the condition of the area investigated and should be given little weight in your final assessment.

This is a summary of comments and objections made to you and your assistants from E&E during the site visit and we still believe they are valid.

Very truly yours,



A. W. Long  
Manager, G.C. Environmental Affairs

AWL:jjs

Attach:

cc: William Messenger U. S. EPA Region V  
Larry Reed, Dir. Hazardous Site Evaluation Div. US EPA

TABLE 5.3

Metal Analysis of  
Groundwater SamplesOwens-Illinois

## PHASE 1

<u>Parameter</u>	<u>Unit</u>	<u>No. 1</u>	<u>No. 2</u>	<u>No. 3</u>	<u>No. 4</u>	<u>No. 5</u>	<u>Field Blank</u>	<u>Drinking Water Standards</u>	<u>RCRA Standards</u>
Total Cyanide	mg/l	0.04	<0.01	<0.01	<0.01	0.01	<0.01	0.05	5.0
Antimony	mg/l	0.142*	0.073*	0.039*	0.091*	0.328*	<0.005	0.01	1.0
Arsenic	mg/l	0.006	0.009	0.013	0.008	0.398*	<0.002	0.05	5.0
Beryllium	mg/l	0.002	0.003	<0.001	0.003	0.034	<0.001	1.00	100.0
Cadmium	mg/l	0.002	0.004	0.003	0.002	0.067*	<0.0001	0.01	1.0
Total Chromium	mg/l	0.008	0.049	0.013	0.033	1.07*	<0.002	0.05	5.0
Copper	mg/l	0.013	0.088	0.029	0.061	2.58*	<0.001	1.00	100.0
Lead	mg/l	0.023	0.056*	0.068*	0.031	1.31*	<0.002	0.05	5.0
Mercury	mg/l	<0.0003	0.0006	0.0005	0.0006	0.0064*	<0.0003	0.002	0.2
Nickel	mg/l	0.286	0.178	0.056	0.089	6.58	<0.005	No Standard	N/A
Selenium	mg/l	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	0.01	1.0
Silver	mg/l	0.0005	0.0006	0.0006	0.0006	0.0055	<0.0003	0.05	5.0
Thallium	mg/l	0.031*	0.028*	0.022*	0.034*	0.122*	<0.002	0.013	1.3
Zinc	mg/l	0.02	0.30	0.11	0.18	11.2*	<0.02	5.0	500.0
Phenols	mg/l	0.01	0.01	0.01	0.01	0.01	<0.01	0.01	0.1

\* = Above Drinking Water Standards.

TABLE 5.2  
METAL ANALYSIS OF GROUNDWATER SAMPLES  
 OWENS-ILLINOIS, ALTON - PHASE II

Parameter	Unit	83-1	83-2	83-3	83-4	83-6	83-7	FIELD BLANK	Drinking Water Standards
Total Cyanide	mg/l	<0.01	<0.01	*1.28	<0.01	<0.01	<0.01	<0.01	0.05
pH	unit	7.7	6.9	9.4	6.4	6.4	7.0	3.5	1.0-0.01
Conductance @ 25C	uS/cm	7170	2180	6660	1660	1790	1280	---	0.05
Antimony	mg/l	*0.115	*0.157	*0.070	*0.079	*0.083	*0.035	<0.005	1.00
Arsenic	mg/l	*0.075	0.026	0.025	0.014	0.016	0.009	<0.002	0.01
Beryllium	mg/l	0.0022	0.0134	0.0034	0.0006	0.0046	<0.0005	<0.0005	0.05
Cadmium	mg/l	0.0007	0.0060	*0.02	0.0006	0.0012	0.0006	<0.0002	1.00
Total Chromium	mg/l	0.050	0.040	*0.740	0.012	0.022	0.022	<0.001	0.05
Copper	mg/l	0.089	0.083	0.33	0.033	0.054	0.046	<0.001	0.002
Lead	mg/l	0.009	0.034	0.003	0.004	0.016	0.002	<0.002	No Standard
Mercury	mg/l	0.0005	0.0009	*0.0043	<0.0002	0.0003	<0.0002	<0.0002	0.01
Nickel	mg/l	0.26	0.33	0.82	0.23	0.26	0.233	<0.1	0.05
Selenium	mg/l	0.009	0.004	*0.016	0.002	0.003	0.003	<0.001	0.013
Silver	mg/l	0.0070	0.0049	0.0055	0.0028	0.0050	0.0017	<0.0001	5.0
Thallium	mg/l	0.004	0.002	0.004	0.001	0.001	0.001	<0.001	0.01
Zinc	mg/l	0.15	0.51	0.33	0.07	0.14	0.02	<0.02	
Phenols	mg/l	0.01	<0.01	*0.04	<0.01	*0.13	*0.03	---	
EA No.		9378	9379	9380	9381	9382	9383	9384	9385

\* Above Drinking Water Standards

TABLE 5.3

**Metal Analysis of  
Groundwater Samples**

Owens-Illinois

PHASE 1

Parameter	Unit	No. 1	No. 2	No. 3	No. 4	No. 5	Field Blank	Drinking Water Standards	RCRA Standards
Total Cyanide	mg/l	0.04	<0.01	<0.01	<0.01	0.01	<0.01	0.05	5.0
Antimony	mg/l	0.142*	0.073*	0.039*	0.091*	0.328*	<0.005	0.01	1.0
Arsenic	mg/l	0.006	0.009	0.013	0.008	0.398*	<0.002	0.05	5.0
Beryllium	mg/l	0.002	0.003	<0.001	0.003	0.034	<0.001	1.00	100.0
Cadmium	mg/l	0.002	0.004	0.003	0.002	0.067*	<0.0001	0.01	1.0
Total Chromium	mg/l	0.008	0.049	0.013	0.033	1.07*	<0.002	0.05	5.0
Copper	mg/l	0.013	0.088	0.029	0.061	2.58*	<0.001	1.00	100.0
Lead	mg/l	0.023	0.056*	0.068*	0.031	1.31*	<0.002	0.05	5.0
Mercury	mg/l	<0.0003	0.0006	0.0005	0.0006	0.0064*	<0.0003	0.002	0.2
Nickel	mg/l	0.286	0.178	0.056	0.089	6.58	<0.005	No Standard	N/A
Selenium	mg/l	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	0.01	1.0
Silver	mg/l	0.0005	0.0006	0.0006	0.0006	0.0055	<0.0003	0.05	5.0
Thallium	mg/l	0.031*	0.028*	0.022*	0.034*	0.122*	<0.002	0.013	1.3
Zinc	mg/l	0.02	0.30	0.11	0.18	11.2*	<0.02	5.0	500.0
Phenols	mg/l	0.01	0.01	0.01	0.01	0.01	<0.01	0.01	0.1

\* = Above Drinking Water Standards

TABLE 5.4  
ORGANIC ANALYSIS OF GROUNDWATER SAMPLES

Owens-Illinois  
Alton - Phase II

	Station						Field Blank
	83-1	83-2	83-3	83-4	83-6	83-7	
<u>Fraction</u>							
<u>Purgeable</u>						X	
Acetone				X			
Methylene chloride						X	X
<u>Acid-Extractable</u>							
Caprolactam	X		X	X			X
<u>Base-Neutral Extractable</u>							
Caprolactam							
Bis (2-Ethyl hexyl)							
pththalate	X		X		X		X

EA No.                    9378     9379     9380     9381     9382     9383     9384

TABLE 5.5  
ORGANIC ANALYSIS OF GROUNDWATER SAMPLES  
 OWENS-ILLINOIS - PHASE I

<u>Fraction</u>	<u>No. 1</u>	<u>No. 2</u>	<u>No. 3</u>	<u>No. 4</u>	<u>Field Blank</u>
<u>Purgeable</u>					
Carbon disulfide	X				
Acetone		X			
Methylene Chloride*					
<u>Acid-Extractable:</u>					
Caprolactam	X	X	X	X	
<u>Base Neutral Extractable</u>					
Caprolactam	X	X	X	X	
bis (2-Ethyl hexyl) phthalate	X				

\* Priority Pollutants

TABLE 5. RESULTS OF CHEMICAL ANALYSIS OF AQUEOUS SAMPLES RECEIVED FROM  
GROUND/WATER TECHNOLOGY , 1 DECEMBER 1983

Parameter	Unit	83-1	83-2	83-3	83-4	83-6	83-7	FIELD BLANK	83-8
Total Cyanide	mg/l	<0.01	<0.01	1.28	<0.01	<0.01	<0.01	<0.01	Total
pH	unit	7.7	6.9	9.4	6.4	6.4	7.0	3.5	Organic
Conductance @ 25C	uS/cm	7170	2180	6660	1660	1790	1280	---	Carbon
Antimony	mg/l	0.115	0.157	0.070	0.079	0.083	0.035	<0.005	9.1 mg/l
Arsenic	mg/l	0.075	0.026	0.025	0.014	0.016	0.009	<0.002	
Beryllium	mg/l	0.0022	0.0134	0.0034	0.0006	0.0046	<0.0005	<0.0005	
Cadmium	mg/l	0.0007	0.0060	0.02	0.0006	0.0012	0.0006	<0.0002	
Total Chromium	mg/l	0.050	0.040	0.740	0.012	0.022	0.022	<0.001	
Copper	mg/l	0.089	0.083	0.33	0.033	0.054	0.046	<0.001	
Lead	mg/l	0.009	0.034	0.003	0.004	0.016	0.002	<0.002	
Mercury	mg/l	0.0005	0.0009	0.0043	<0.0002	0.0003	<0.0002	<0.0002	
Nickel	mg/l	0.26	0.33	0.82	0.23	0.26	0.233	<0.1	
Selenium	mg/l	0.009	0.004	0.016	0.002	0.003	0.003	<0.001	
Silver	mg/l	0.0070	0.0049	0.0055	0.0028	0.0050	0.0017	<0.0001	
Thallium	mg/l	0.004	0.002	0.004	0.001	0.001	0.001	<0.001	
Zinc	mg/l	0.15	0.51	0.33	0.07	0.14	0.02	<0.02	
Phenols	mg/l	0.01	<0.01	0.04	<0.01	0.13	0.03	---	
EA No.		9378	9379	9380	9381	9382	9383	9384	9385

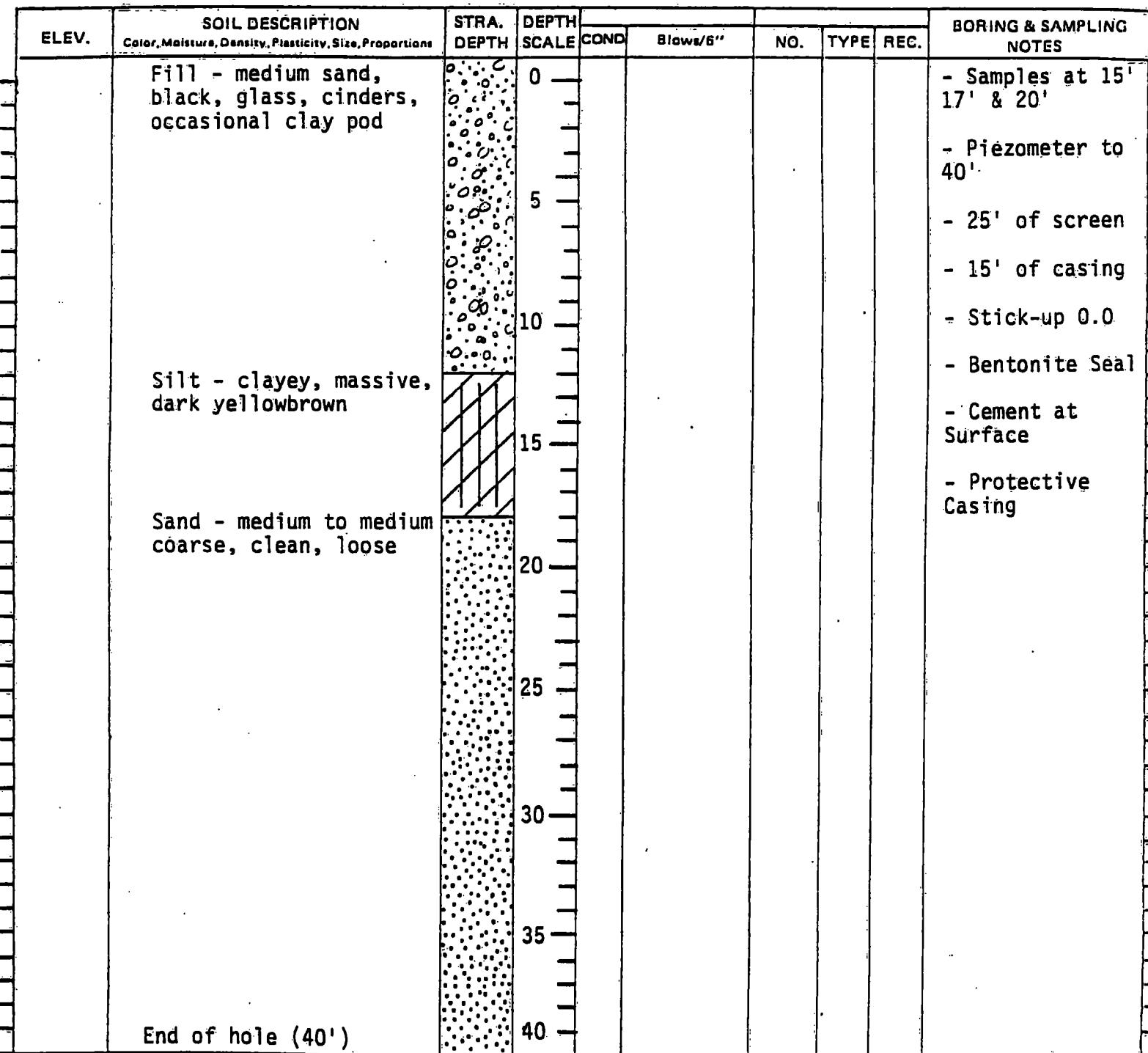
**GROUND/WATER TECHNOLOGY INC.**  
**RECORD OF SOIL EXPLORATION**

83-6

BORING #

Contracted With Owens-Illinois Job # #83546  
 Projects Name Owens-Illinois-Sand Sheet of  
 Location Alton, Illinois

SAMPLER:  
 Datum \_\_\_\_\_ Hammer Wt. \_\_\_\_\_ Lbs. Hole Diameter 6½ Engineer GRJ  
 Surf. Elev. 423.0 Ft. Hammer Drop \_\_\_\_\_ In.  
 Date Started 11/29/83 Pipe Size \_\_\_\_\_ In. Boring Method Auger Date Completed 11/29/83



SAMPLER TYPE

DS - DRIVEN SPLIT SPOON  
 PT - PNEUMATIC SHIELDY TUBE  
 CA - CONTINUOUS FLIGHT AUGER

GROUND WATER DEPTH

AT COMPLETION \_\_\_\_\_ FT.  
 AFTER \_\_\_\_\_ HRS. \_\_\_\_\_ FT.  
 AFTER 24 HRS. 13.5 FT.

BORING METHOD

HSA - HOLLOW STEM AUGERS  
 CFA - CONTINUOUS FLIGHT AUGER  
 DC - DRIVING CASING  
 MD - MUD DRILLING

GROUND/WATER TECHNOLOGY INC.  
RECORD OF SOIL EXPLORATION

BORING # 83-7

Contracted With OWENS-ILLINOIS  
 Projects Name OWENS-ILLINOIS-SAND  
 Location ALTON, ILLINOIS

Job # #83546

Sheet \_ of \_

SAMPLER:  
 Datum Hammer Wt. Lbs. Hole Diameter 6"  
 Surf. Elev. 421.1 Ft. Hammer Drop In. Hollow Stem  
 Date Started 11/29/83 Pipe Size In. Boring Method Auger  
 Date Completed 11/30/83

ELEV.	SOIL DESCRIPTION Color, Moisture, Density, Plasticity, Size, Proportions	STRA. DEPTH	DEPTH SCALE	COND	Blows/6"	NO.	TYPE	REC.	BORING & SAMPLING NOTES	
	Fill- gravel		0						- Samples at 5', 10', & 25'	
	Clay-silty, massive medium blue grey		5						- Piezometer to 38'	
			10						- 10' of screen	
			15						- 30' of casing	
			20						- Stick-up 1.8'	
			25						- Bentonite Seal	
			30						- Cement at Surface	
	Organic black streaks, some to slightly silty		35						- Protective Casing	
	Sand - medium to medium fine, some silt		40							

## SAMPLER TYPE

## GROUND WATER DEPTH

## BORING METHOD

DS - DRIVEN SPLIT SPOON  
 PT - PRESSED SHELBY TUBE  
 CFA - CONTINUOUS FLIGHT AUGER

AT COMPLETION FT.  
 AFTER HRS. FT.  
 AFTER 24 HRS. 21.9 FT.

HSA - HOLLOW STEM AUGERS  
 CFA - CONTINUOUS FLIGHT AUGERS  
 DC - DRIVING CASING  
 MD - MUD DRILLING

TABLE 6.1

Water Level Information

Owens-Illinois

<u>Piezometer No.</u>	<u>Depth to Water (ft)</u>	<u>Approximate Surface Elevation (ft)</u>	<u>Water Level Elevation (ft)</u>
1	6.7	416	409.3
2	1.9	411	409.1
3	7.4	416	408.6
4	11.9	426	414.1
5	9.1	426	416.9

TABLE 6.2

Metal Analysis of  
Groundwater SamplesOwens-Illinois

Parameter	Unit	No. 1	No. 2	No. 3	No. 4	No. 5	Field Blank	Drinking Water Standards	RCRA Standards
Total Cyanide	mg/l	0.04	<0.01	<0.01	<0.01	0.01	<0.01	0.05	5.0
Antimony	mg/l	0.142*	0.073*	0.039*	0.091*	0.328*	<0.005	0.01	1.0
Arsenic	mg/l	0.006	0.009	0.013	0.008	0.398*	<0.002	0.05	5.0
Beryllium	mg/l	0.002	0.003	<0.001	0.003	0.034	<0.001	1.00	100.0
Cadmium	mg/l	0.002	0.004	0.003	0.002	0.067*	<0.0001	0.01	1.0
Total Chromium	mg/l	0.008	0.049	0.013	0.033	1.07*	<0.002	0.05	5.0
Copper	mg/l	0.013	0.088	0.029	0.061	2.58*	<0.001	1.00	100.0
Lead	mg/l	0.023	0.056*	0.068*	0.031	1.31*	<0.002	0.05	5.0
Mercury	mg/l	<0.0003	0.0006	0.0005	0.0006	0.0064*	<0.0003	0.002	0.2
Nickel	mg/l	0.286	0.178	0.056	0.089	6.58	<0.005	No Standard	N/A
Selenium	mg/l	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	0.01	1.0
Silver	mg/l	0.0005	0.0006	0.0006	0.0006	0.0055	<0.0003	0.05	5.0
Thallium	mg/l	0.031*	0.028*	0.022*	0.034*	0.122*	<0.002	0.013	1.3
Zinc	mg/l	0.02	0.30	0.11	0.18	11.2*	<0.02	5.0	500.0
Phenols	mg/l	0.01	0.01	0.01	0.01	0.01	<0.01	0.001	0.1

\* = Above Drinking Water Standards

TABLE 6.3

Organic Analysis of  
Groundwater SamplesOwens-Illinois

<u>Fraction</u>	<u>No. 1</u>	<u>No. 2</u>	<u>No. 3</u>	<u>No. 4</u>	<u>No. 5</u>	<u>Field Blank</u>
<b>Purgeable:</b>						
Carbon disulfide	x					
Acetone					x	
Methylene Chloride*		x			x	
<b>Acid-Extractable:</b>						
Caprolactam	x	x	x	x	x	
<b>Base-Neutral Extractable:</b>						
Caprolactam	x	x	x	x	x	
bis (2-Ethyl hexyl)phthalate	x		x	x		
Naphthalene					x	
Fluorene*					x	
Phenanthrene*					x	
Anthracene*					x	
Fluoranthene*					x	
Pyrene*					x	
Benzo (a) Anthracene*					x	
Chrysene*					x	
Benzo (k) fluoranthene*					x	
Benzo (a) pyrene*					x	
Indeno (1,2,3-cd) pyrene*					x	
Benzo (g,h,i) perylene*					x	

\* = Priority Pollutants

## GROUND/WATER TECHNOLOGY, INC.

BORING # 83-1

## RECORD OF SOIL EXPLORATION

Contracted With Owens-IllinoisJob # 83528Project Name OwensSheet 1 of 1Location Alton, IllinoisSAMPLER: CA

Datum \_\_\_\_\_ Hammer Wt. \_\_\_\_\_ Lbs.

Hole Diameter 8"Engineer GRJSurf. Elev. 416 Ft. Hammer Drop \_\_\_\_\_ In.Data Started 9/10/83 Pipe Size \_\_\_\_\_ In.Boring Method HSADate Completed 9/11/83

ELEV.	SOIL DESCRIPTION Color, Moisture, Density, Plasticity, Size, Proportions	STRA. DEPTH	DEPTH SCALE	COND	Blows/6"	NO.	TYPE	REC.	BORING & SAMPLING NOTES
	Fill - med. silty sand with glass and brick throughout		5						- Samples taken every 5' - Piezometer to 38'
	Silt - Organic, over bank, occasional wood chunks, med. grey		10						- 35' of screen - Stick-up 1.2' - Bentonite seal - Cement at surface - Protective casing
	Sand - Med. to med. fine med. grey little silt  - Occasional organic stringers  - trace silt  - med., clean, sand		15						
			20						
			25						
			30						
			35						
	End of Hole (40')								

SAMPLER TYPE

GROUND WATER DEPTH

BORING METHOD

S - DRIVEN SPLIT SPOON

HSA - HOLLOW STEM AUGERS

T - PRESSED SHELBY TUBE

CFA - CONTINUOUS FLIGHT AUGER

CA - CONTINUOUS FLIGHT AUGER

DC - DRIVING CASING

AT COMPLETION \_\_\_\_\_ FT.

MD - MUD DRILLING

AFTER \_\_\_\_\_ HRS. \_\_\_\_\_ FT.

AFTER 24 HRS. 5.7 FT.

## GROUND/WATER TECHNOLOGY, INC.

BORING # 83-2

## RECORD OF SOIL EXPLORATION

Contracted With Owens-IllinoisJob # 83528Project Name OwensSheet 1 of 1Location Alton, Illinois

SAMPLER: CA

Datum \_\_\_\_\_ Hammer Wt. \_\_\_\_\_ Lbs.

Hole Diameter 8"Engineer GRJSurf. Elev. 411 Ft.

Hammer Drop \_\_\_\_\_ In.

Date Started 9/11/83

Pipe Size \_\_\_\_\_ In.

Boring Method HSADate Completed 9/12/83

ELEV.	SOIL DESCRIPTION Color, Moisture, Density, Plasticity, Size, Properties	STRA. DEPTH	DEPTH SCALE	COND	Blows/6"	NO.	TYPE	REC.	BORING & SAMPLING NOTES
	Fill - Blaish grey to yellow brown clay with plastic, etc.								- Samples taken every 5'
	Clay - Bluish grey to yellow brown, massive organic		5						- Piezometer to 30'
	- Occasional sand layer		10						- 25' of screen
	Silt - Med. grey		15						- 7' of casing
	- Grading to a med. grey silty med. sand		20						- Stick-up 1.2'
	Sand - Med. grained clean loose		25						- Bentonite seal
	- Med. to coarse grained		30						- Cement at surface
	- coarse, clean, loose, occasional pebble		35						- Protective casing
	End of Hole (40')								

SAMPLER TYPE

GROUND WATER DEPTH

BORING METHOD

DS - DRIVEN SPLIT SPOON  
PT - PRESSED SHELBY TUBE  
CA - CONTINUOUS FLIGHT AUGERAT COMPLETION \_\_\_\_\_ FT.  
AFTER \_\_\_\_\_ HRS. \_\_\_\_\_ FT.  
AFTER 24 HRS. 1.9 FT.HSA - HOLLOW STEM AUGERS  
CFA - CONTINUOUS FLIGHT AUGER  
DC - DRIVING CASING  
MD - MUD DRILLING

**GROUND/WATER TECHNOLOGY, INC.**

**BORING #** 83-3

## **RECORD OF SOIL EXPLORATION**

Contracted With Owens-Illinois

83528

Projects Name: Owens

Sheet    of    1 of 1

Location Alton, Illinois

Datum \_\_\_\_\_ SAMPLER: Hammer Wt. \_\_\_\_\_ Lbs. Hole Diameter 8" Engineer GRJ  
 Surf. Elev. 416 Ft. Hammer Drop \_\_\_\_\_ In.  
 Date Started 9/12/83 Pipe Size \_\_\_\_\_ in. Boring Method HSA Date Completed 9/12/83

ELEV.	SOIL DESCRIPTION Color, Moisture, Density, Plasticity, Size, Proportions	STRA. DEPTH	DEPTH SCALE	COND		Blows/6"	NO.	TYPE	REC.	BORING & SAMPLING NOTES
				COND	Blows/6"					
	Fill - Loose, sandy, hydrocarbons throughout, smelly									- Samples taken every 5'
	Sand - Yellow brown - Clean - Med. to med. coarse  - Occasional silty layer		5 10 15 20 25 30 35							- Piezometer to 40' - 35' of screen. - 7' of casing - Stick-up 1.9' - Bentonite seal - Cement at Surface - Protective casing
	End of Hole (40')		40							

**SAMPLER TYPE**

### **GROUND WATER DEPTH**

## **BORING METHOD**

**D - DRIVEN SPLIT SPOON  
T - PRESSED SHELBY TUBE  
CA - CONTINUOUS FLIGHT AUGER**

AT COMPLETION \_\_\_\_\_ FT.  
AFTER \_\_\_\_\_ HRS. \_\_\_\_\_ FT.  
AFTER 24 HRS. 7.4 FT.

**HSA - HOLLOW STEM AUGERS  
CFA - CONTINUOUS FLIGHT AUGERS  
DC - DRIVING CASING  
MD - MUD DRILLING**

## GROUNDWATER TECHNOLOGY, INC.

83-4

## RECORD OF SOIL EXPLORATION

Contracted With Owens - IllinoisJob # 83528Project Name OwensSheet 1 of 1Location Alton, Illinois

## SAMPLER:

Datum \_\_\_\_\_

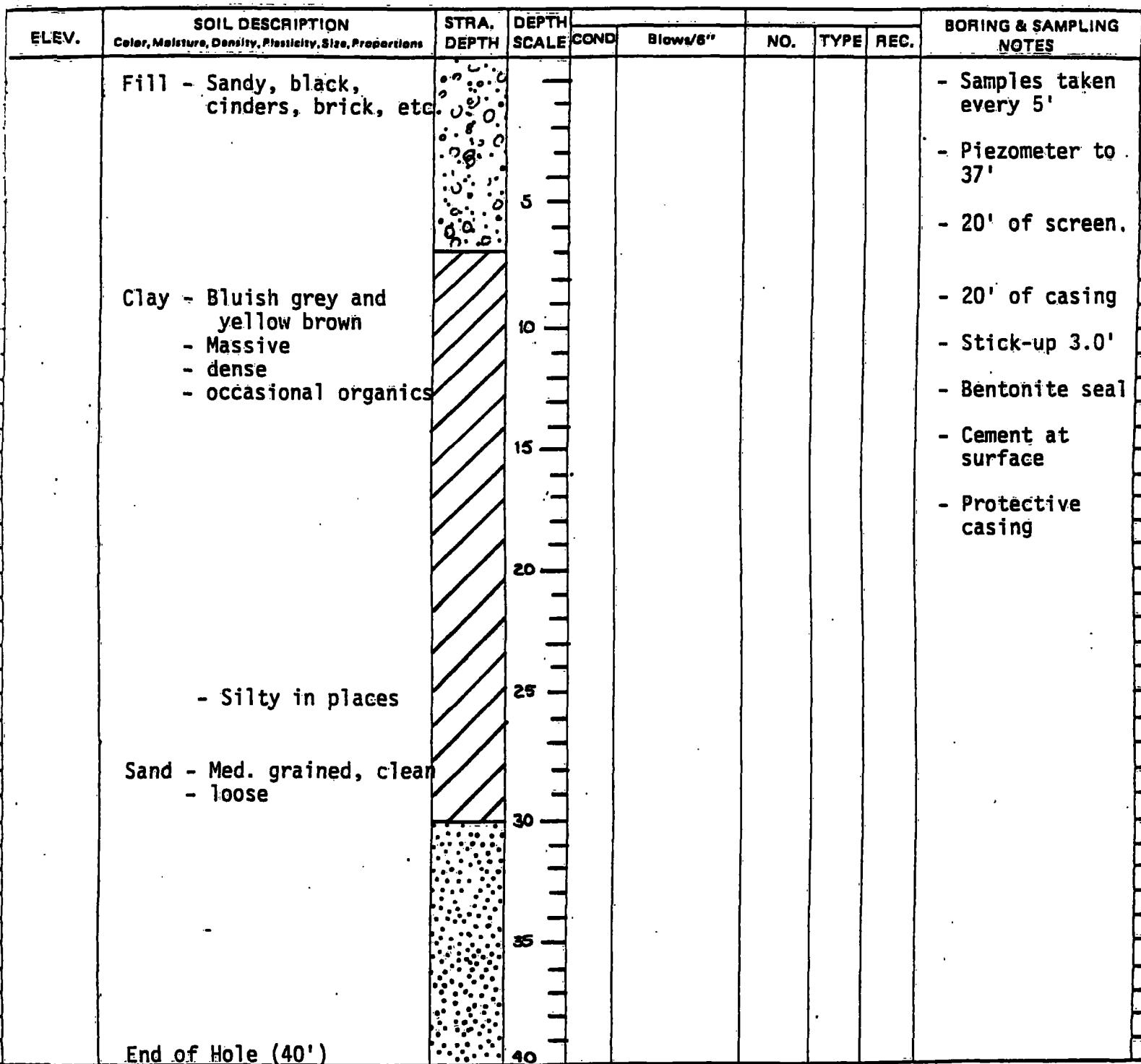
Hammer Wt. \_\_\_\_\_ Lbs.

Hole Diameter 8"Engineer GRJSurf. Elev. 426 Ft.

Hammer Drop \_\_\_\_\_ In.

Date Started 9/12/83

Pipe Size \_\_\_\_\_ In.

Boring Method HSADate Completed 9/12/83

## SAMPLER TYPE

DS - DRIVEN SPLIT SPOON

PT - PRESSED SHELBY TUBE

CA - CONTINUOUS FLIGHT AUGER

## GROUND WATER DEPTH

AT COMPLETION \_\_\_\_\_ FT.

AFTER \_\_\_\_\_ HRS. \_\_\_\_\_ FT.

AFTER 24 HRS. 11.9 FT.

## BORING METHOD

HSA - HOLLOW STEM AUGERS

CFA - CONTINUOUS FLIGHT AUGER

DC - DRIVING CASING

MD - MUD DRILLING

**GROUND/WATER TECHNOLOGY, INC.**  
**RECORD OF SOIL EXPLORATION**

BORING # 83-5

Contracted With Owens-Illinois

**Job #** 83528

Project Name Owens

Sheet of 1 of 1

Location Alton, Illinois

10. The following table shows the number of hours worked by each employee.

**SAMPLER:** \_\_\_\_\_

**Datum** \_\_\_\_\_ **Hammer Wt.** \_\_\_\_\_ **Lbs.** \_\_\_\_\_ **Hole Diameter** 8" **Engineer** GRJ

Surf. Elev. 420 Ft. Hammer Drop    In.

Date Started 9/12/83 Pipe Size \_\_\_\_\_ In. Boring Method HSA Date Completed 9/12/83

## **AMPLER TYPE**

### **GROUND WATER DEPTH**

## **BORING METHOD**

S - DRIVEN SPLIT SPOON  
T - PRESSED SHELBY TUBE  
CA - CONTINUOUS FLIGHT AUGER

AT COMPLETION \_\_\_\_\_ FT.  
AFTER \_\_\_\_\_ HRS. \_\_\_\_\_ FT.  
AFTER 24 HRS. 9.1 FT.

**HSA - HOLLOW STEM AUGERS  
CFA - CONTINUOUS FLIGHT AUGERS  
DC - DRIVING CASING  
MD - MUD DRILLING**

